

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 30 NOV 2005

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Applicant's or agent's file reference 47454+47522	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/IT2004/000652	International filing date (day/month/year) 25.11.2004	Priority date (day/month/year) 05.12.2003	
International Patent Classification (IPC) or national classification and IPC B65H19/26, B65H19/22			
Applicant FABIO PERINI S.P.A. et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 6 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 23.09.2005		Date of completion of this report 28.11.2005	
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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IT2004/000652

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-23 as originally filed

Claims, Numbers

1-56 received on 23.09.2005 with letter of 14.09.2005

Drawings, Sheets

1/13-13/13 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IT2004/000652

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-56
	No: Claims	
Inventive step (IS)	Yes: Claims	1-56
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-56
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

SECTION V : CITATIONS AND EXPLANATIONS

1. The invention relates to a rewinding machine (claim 1) and to a method for the production of logs of wound web material (claim 40) wherein mechanical members are removed from the area below the rolling surface so that the structure of the core rolling surface can be simplified or, by means of nozzles positioned above and below the core channel, the first turn of web can be wrapped around a new core without the need of glue (cf. page 4, lines 10 to 15 of the description).
The posed problem is solved by associating an interruption member with a feed member **on the side of the feed path opposite to the rolling surface**, said interruption member being **positioned at least partly on the opposite side of the feed member with respect to the channel** formed by the rolling surface and the feed member.
2. Since every one of the documents cited in the Search Report and in the description fails in disclosing **at least** the above-mentioned features, independent claims 1 and 40 as well as their dependent claims are considered to fulfil the criterion set forth in Article 33(2) PCT (novelty).
3. Furthermore the invention, as disclosed in independent claims 1 and 40 and in their dependent claims, is considered not to be obvious to a person skilled in the art.
Document US 2003/0189123 (D1), which is considered to represent the closest prior art, describes a similar apparatus wherein the interruption member is positioned under the rolling surface and **precisely** severs the web downstream of the core insertion region without the need of accelerating one of the winding rollers and without having to hold the web material on the winder roller.
D1 describes a solution providing for advantages which are different from those mentioned in the present application and moreover it does not address the problem solved in the present application.
Since the position of the interruption member in D1 should be avoided to achieve the advantages of the present application, no hint can be found therein obviously leading a person skilled in the art to a solution according to claims 1 and 40.

Document WO-A-0172620, cited in the description describes a machine similar to that of D1: the same considerations made for D1 can be applied to the content of this

document.

Also the other documents cited in the description and in the Search Report describe similar machines having either the same position of the interruption member of D1 or other interruption means even more different from that of the present application, independent claims 1 and 40 and their dependent claims are considered to fulfil the criterion set forth in Article 33(3) PCT (inventive step).

4. Finally, since it appears that the claimed invention can be made or used in a technological sense in industry, it is considered to show industrial applicability within the meaning of Article 33(4) PCT.

SECTION VII: DEFECTS IN THE INTERNATIONAL APPLICATION

5. The requirements of Article 6 PCT are not met because the description is not in conformity with the claims presently on file.

Amendments under Art. 34 PCTClaims

1. A rewinding machine for winding a web material (N) in logs (R), comprising: a feed path for feeding the web material towards a winding system (1, 2, 3); an interruption member (23; 101; 111; 201) to interrupt the web material at the end of winding of a log; a core feeder (19, 21) to insert winding cores (A1, A2) in succession in a channel (17) defined by a rolling surface (15) and a movable core feed member (13), arranged so that when a core is inserted in said channel (17) the web material (N) is between said core (A1, A2) and said feed member (13) and in contact with said feed member (13), said feed path extending along said channel; characterized in that said interruption member is associated with said feed member (13); and that said interruption member is arranged on the side of said feed path opposite said rolling surface (15) and positioned at least partly on the opposite side of said feed member (13) with respect to said channel (17) to act on the web material (N) through said feed member (13).

2. Rewinding machine as claimed in claim 1, characterized in that said feed member (13) comprises a flexible member running between at least two rollers (1, 11) and that said interruption member (23; 101; 111; 201) is positioned between said two rollers, within the closed path defined by said flexible member (13).

3. Rewinding machine as claimed in claim 2, characterized in that said flexible member comprises a plurality of parallel belts (13A) between which said interruption member operates.

4. Rewinding machine as claimed in claim 2 or 3, characterized in that one (1) of said rollers (1, 11) is a first winding roller of a surface winding cradle (1, 2, 3) forming said winding system.

5. Rewinding machine as claimed in one or more of the preceding claims, characterized in that said interruption member (23) is a suction member which applies a force on said web material, thus obstructing the feed thereof.

6. Rewinding machine as claimed in claims 2 and 5, characterized in that said suction member comprises a counter surface (33A; 55A) along which said flexible member runs (13).

7. Rewinding machine as claimed in one or more of the claims 1 to 5, characterized in that said interruption member (101; 111; 201) is a mechanical member which acts on the web material extending through said feed member.

8. Rewinding machine as claimed in claim 7, characterized in that said mechanical member acts on the web material to apply a tension on it causing it to tear.

9. Rewinding machine as claimed in claim 7 or 8, characterized in that said mechanical member acts on the web material obstructing the feed thereof.

5 10. Rewinding machine as claimed in one or more of the claims 7, 8 or 9, characterized in that said mechanical member is provided with tips or pins which penetrate the web material.

10 11. Rewinding machine as claimed in one or more of the claims 7 to 10, characterized in that said mechanical interruption member (101; 111; 201) is synchronized with said core feeder (19; 21) to act on the web material (N) in conjunction with a winding core (A2) which is being fed along the channel (17).

12. Rewinding machine as claimed in one or more of the claims 7 to 11, characterized in that said mechanical interruption member (101) moves substantially orthogonally to the feed direction of the web material (N).

15 13. Rewinding machine as claimed in claim 12, characterized in that said mechanical interruption member (101) is controlled so as to pinch the web material N against a winding core (A2).

14. Rewinding machine as claimed in one or more of the claims 7 to 11, characterized in that said mechanical interruption member (111) is a rotating member.

20 15. Rewinding machine as claimed at least in claims 2 and 14, characterized in that said mechanical interruption member rotates around an axis (X) parallel to the axes of rotation of said two rollers (1; 11) around which said flexible member (13) runs, and at the moment when the web material is interrupted, protrudes towards said channel (17).

25 16. Rewinding machine as claimed in claim 14 or 15, characterized in that said mechanical interruption member (111) at least during the interruption of said web material (N) rotates at a peripheral speed different from the feed speed of the web material (N).

30 17. Rewinding machine as claimed at least in claim 4, characterized in that it comprises a second winding roller (2), defining with said first winding roller (1) a nip (5) for passage of the web material.

18. Rewinding machine as claimed in claim 17, characterized in that said nip is positioned substantially at the end of said channel (17) of the winding cores (A1, A2).

19. Rewinding machine as claimed in one or more of the preceding claims, characterized by glue application means for applying glue on said cores.

20. Rewinding machine as claimed in one or more of the preceding claims, characterized by blower nozzles (81, 83, 85) to facilitate winding of the free edge
5 around the winding core.

21. Rewinding machine as claimed in claim 10, characterized in that it comprises at least a first and a second set of blower nozzles (81, 83) arranged upstream and downstream of the web material suction application area.

22. Rewinding machine as claimed in claim 21, characterized in that said
10 first and said second set of blower nozzles (81, 83) are arranged on the same side of the channel (17) of the cores (A1; A2).

23. Rewinding machine as claimed in claim 20, 21 or 22, characterized in that it comprises a third set of blower nozzles (85).

24. Rewinding machine as claimed in one or more of the claims 20 to 23,
15 characterized in that at least one of said sets of blower nozzles is oscillating or rotating around a crosswise axis with respect to the feed direction of the web material.

25. Rewinding machine as claimed in claims 23 and 24, characterized in that said third set of blower nozzles (85) is oscillating.

26. Rewinding machine as claimed in at least claim 25, characterized in
20 that said third set of blower nozzles (85) is arranged on the opposite side of the core channel (17) with respect to said first and said second set of blower nozzles (83, 85).

27. Rewinding machine as claimed in one or more of the claims 20 to 26, characterized in that it has no means for applying glue to the winding cores, the winding of each log beginning by means of said blower nozzles.

25 28. Rewinding machine as claimed in one or more of the preceding claims, characterized in that the path of the cores is constructed and arranged so that each core rolls along said path far enough to transfer part of the glue previously applied on said core to a portion of web material which will form the final free edge of the log (R).

29. Rewinding machine as claimed in one or more of the preceding claims,
30 characterized in that said interruption member comprises at least one diverter element which acts on the web material across said feed member, protruding into said channel.

30. Rewinding machine as claimed in claim 29, characterized in that said diverter element comprises at least one elastic lamina.

31. Rewinding machine as claimed in claim 29 or 30, characterized in that

said interruption member comprises an actuator which acts on said at least one diverter element to cause movement or deformation thereof across said feed member towards the inside of said channel

32. Rewinding machine as claimed in claim 31, characterized in that said
5 actuator comprises at least one cam positioned, with respect to said feed member, on the opposite side of said channel.

33. Rewinding machine as claimed in one or more of claims 29 to 32, characterized in that said feed member comprises at least two flexible members, and that said diverter element is positioned between said at least two adjacent flexible
10 members.

34. Rewinding machine as claimed in claim 33, characterized in that said interruption member comprises a plurality of diverter elements positioned between adjacent flexible members.

35. Rewinding machine as claimed in one or more of claims 30 to 34,
15 characterized in that said at least one elastic lamina is connected to a cross member positioned, with respect to said feed member, on the opposite side of said channel

36. Rewinding machine as claimed in claim 35, characterized in that said cross member runs crosswise to the feed direction of the core in said channel, said at least one elastic lamina extending from said cross member in the core feed direction

20 37. Rewinding machine as claimed in one or more of claims 28 to 36, characterized in that said diverter element is positioned and controlled to cause braking of the core and slackening of the web material upstream of the core.

38. Rewinding machine as claimed in one or more of the claims 28 to 36, characterized in that said diverter element is positioned and controlled to prevent
25 slackening of the web material upstream of said core

39. Rewinding machine as claimed in one or more of claims 28 to 38, characterized in that activation of said elastic laminas is staggered over time to cause gradual breakage of said web material.

40. Method for the production of logs of wound web material, comprising
30 the following phases:

- feeding the web material to a winding system along a feed path extending along a channel (17) defined between a rolling surface (15) and a movable core feed member (13);
- winding a first log (R) of web material around a first winding core (A1);

- inserting a new winding core (A2) in said channel and feeding said core along said channel, with the web material between said core and said feed member (13);
- interrupting the web material at the end of winding of said first log (R), forming a final free edge (Lf) of said first log and an initial free edge (Li) for winding of a second log (R);

5 41. characterized in that said web material is interrupted by an interruption member (23; 101; 111; 201) which acts on the web material (N) along the channel (17) on the side of the feed path opposite said rolling surface, across said feed member (13). Method as claimed in claim 40, characterized in that said winding system is a surface winding system comprising a winding cradle.

10 42. Method as claimed in claim 40 or 41, characterized in that said interruption member (23) applies timed suction on the web material.

 43. Method as claimed in claim 42, characterized in that the web material is fed along a counter surface (33A; 55A), on which said suction is applied and along
15 which said core feed member (13) runs.

 44. Method as claimed in claim 43, characterized in that said counter surface is fixed.

 45. Method as claimed in claim 42, 43 or 44, characterized in that said timed suction is applied downstream of the position of said core along the insertion
20 path, causing interruption of the web material downstream of said core.

 46. Method as claimed in claim 40 or 41, characterized in that said interruption member (101; 111; 201) is a mechanical member which acts mechanically on the web material.

 47. Method as claimed in claim 46, characterized in that the web material is
25 pinched between said mechanical interruption member and said second core (A2).

 48. Method as claimed in claim 46 or 47, characterized in that said mechanical interruption member contacts the web material (N), the mechanical interruption member moving at a different speed from the feed speed of the web material.

30 49. Method as claimed in one or more of the claims 40 to 48, characterized in that glue (C) is applied on said winding cores (A1, A2).

 50. Method as claimed in claim 49, characterized in that said glue is applied along at least one longitudinal line.

 51. Method as claimed in claim 49 or 50, characterized in that at least a

part (C1) of said glue (C) is transferred to a portion of web material belonging to the final free edge (Lf) to close the final free edge of said log.

52. Method as claimed in one or more of the claims 40 to 51, characterized in that winding of the initial free edge (Li) around said winding core is begun or
5 facilitated by means of one or more jets of air.

53. Method according to one or more of claims 40 to 52, characterized in that said interruption member includes at least one diverter element which is made to protrude into said channel when the web material has to be interrupted.

54. Method as claimed in claim 53, characterized in that said diverter
10 element comprises an elastic lamina.

55. Method as claimed in claim 53 or 54, characterized in that said web material is interrupted causing a plurality of said diverter elements to protrude into said channel.

56. Method as claimed in claim 55, characterized in that said diverter
15 elements are made to protrude into said channel staggered over time to cause gradual breakage of the web material.